

PLATINUM (-190, -192, -194, -195, -196, -198) POWDER

Safety Data Sheet according to OSHA HazCom Standard (2012) requirements

Issue Date: 01/01/2013 Print Date: 12/03/2015 Initial Date: Not Available S.GHS.USA.EN

SECTION 1 IDENTIFICATION

Product Identifier	
Product name	PLATINUM POWDER
Chemical Name	Platinum
Synonyms	Platinum
Proper shipping name	Metal powder, flammable, n.o.s.
Chemical formula	Pt
Other means of identification	Not Available
CAS number	7440-06-4

Relevant identified uses of the substance

Medical and research applications

Details of the manufacturer

Registered company name	Oak Ridge National Laboratory
Address	P.O. Box 2008, Oak Ridge, Tennessee 37831-6158
Telephone	(865) 574-6984
Fax	(865) 574-6986
Website	http://isotopes.gov/
Email	isotopes@ornl.gov

Emergency telephone number

Association / Organization	Oak Ridge National Laboratory
Emergency telephone numbers	(865) 574-6606
Other emergency telephone numbers	CHEMTREC: 1-800-424-9300

SECTION 2 HAZARDS IDENTIFICATION

Classification of the substance or mixture

CHEMWATCH HAZARD RATINGS

	Min	Max	
Flammability	3		
Toxicity	2	. O Minimum	
Body Contact	2		ri -
Reactivity	2	2 = Moderat	е
Chronic	2	3 = High 4 = Extreme	



Flammable Solid Category 1, Skin/Irritation Category 2, Eye Irritation Category 2A, Skin Sensitizer Category 1, Carcinogen Category 2, STOT - SE (Resp. Irr.) Category 3, Acute Aquatic Hazard Category 3

Label elements

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Hazard	statement	(s)	

Hazard statement(s)	
H228	Flammable solid
H315	Causes skin irritation
H319	Causes serious eye irritation
H317	May cause an allergic skin reaction
H335	May cause respiratory irritation
Precautionary statement(s) Prevention	
P201	Obtain special instructions before use.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
Precautionary statement(s) Response	

	· · · · · · · · · · · · · · · · · · ·	
P308+P313	IF exposed or concerned: Get medical advice/attention.	
P370+P378	In case of fire: Use extinguishing media for surround materials.	
P302+P352	IF ON SKIN: Wash with plenty of water and soap	
P305+P351+P338	P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.	
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Precautionary statement(s) Storage

P403+P233 Store in a well-ventilated place	ace. Keep container tightly closed.

Precautionary statement(s) Disposal

Dispose of contents/container to authorized chemical landfill or if organic to high temperature incineration

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

Substances

CAS No	%[weight]	Name
7440-06-4	100	platinum

Mixtures

See section above for composition of Substances

SECTION 4 FIRST AID MEASURES

Description of first aid measures

Eye Contact	If this product comes in contact with the eyes: Wash out immediately with fresh running water. Finsure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids. Seek medical attention without delay; if pain persists or recurs seek medical attention. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel. DO NOT attempt to remove particles attached to or embedded in eye. Lay victim down, on stretcher if available and pad both eyes, make sure dressing does not press on the injured eye by placing thick pads under dressing, above and below the eye. Seek urgent medical assistance, or transport to hospital. Lay victim down, on stretcher if available and pad BOTH eyes, make sure dressing does not press on the injured eye by placing thick pads under dressing, above and below the eye. Seek urgent medical assistance, or transport to hospital.
Skin Contact	If skin contact occurs: Immediately remove all contaminated clothing, including footwear. Flush skin and hair with running water (and soap if available). Seek medical attention in event of irritation. In case of burns: Immediately apply cold water to burn either by immersion or wrapping with saturated clean cloth. DO NOT remove or cut away clothing over burnt areas. Do NOT pull away clothing which has adhered to the skin as this can cause further injury. DO NOT break blister or remove solidified material. Quickly cover wound with dressing or clean cloth to help prevent infection and to ease pain. For large burns, sheets, towels or pillow slips are ideal; leave holes for eyes, nose and mouth. DO NOT apply ointments, oils, butter, etc. to a burn under any circumstances. Water may be given in small quantities if the person is conscious. Alcohol is not to be given under any circumstances. Reassure. Treat for shock by keeping the person warm and in a lying position. Seek medical aid and advise medical personnel in advance of the cause and extent of the injury and the estimated time of arrival of the patient.
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Inhalation	 If fumes or combustion products are inhaled remove from contaminated area. Lay patient down. Keep warm and rested. Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures. Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary. Transport to hospital, or doctor, without delay.
Ingestion	 If swallowed do NOT induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. Observe the patient carefully. Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious. Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink. Seek medical advice.

Indication of any immediate medical attention and special treatment needed

Copper, magnesium, aluminum, antimony, iron, manganese, nickel, zinc (and their compounds) in welding, brazing, galvanizing or smelting operations all give rise to thermally produced particulates of smaller dimension than may be produced if the metals are divided mechanically. Where insufficient ventilation or respiratory protection is available these particulates may produce "metal fume fever" in workers from an acute or long term exposure.

- Onset occurs in 4-6 hours generally on the evening following exposure. Tolerance develops in workers but may be lost over the weekend. (Monday Morning Fever)
- Pulmonary function tests may indicate reduced lung volumes, small airway obstruction and decreased carbon monoxide diffusing capacity but these abnormalities resolve after several months.
- Although mildly elevated urinary levels of heavy metal may occur they do not correlate with clinical effects.
 The general approach to treatment is recognition of the disease, supportive care and prevention of exposure.
- Seriously symptomatic patients should receive chest x-rays, have arterial blood gases determined and be observed for the development of tracheobronchitis and pulmonary edema.

[Ellenhorn and Barceloux: Medical Toxicology]

SECTION 5 FIREFIGHTING MEASURES

Extinguishing media

	 Metal dust fires need to be smothered with sand, inert dry powders. DO NOT USE WATER, CO2 or FOAM. Use DRY sand, graphite powder, dry sodium chloride based extinguishers, G-1 or Met L-X to smother fire. Confining or smothering material is preferable to applying water as chemical reaction may produce flammable and explosive hydrogen gas.
Special hazards arising fro	om the substrate or mixture
	Reacts with acids producing flammable / explosive hydrogen (H2) gas None known.

Advice for firefighters

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Fire Fighting	 Alert Fire Brigade and tell them location and nature of hazard. Wear breathing apparatus plus protective gloves. Prevent, by any means available, spillage from entering drains or water course. Fight fire from a safe distance, with adequate cover.
Fire/Explosion Hazard	 DO NOT disturb burning dust. Explosion may result if dust is stirred into a cloud, by providing oxygen to a large surface of hot metal. DO NOT use water or foam as generation of explosive hydrogen may result. With the exception of the metals that burn in contact with air or water (for example, sodium), masses of combustible metals do not represent unusual fire risks because they have the ability to conduct heat away from hot spots so efficiently that the heat of combustion cannot be maintained - this means that it will require a lot of heat to ignite a mass of combustible metal.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Minor Spills	 Remove all ignition sources. DO NOT touch or walk through spilled material. Clean up all spills immediately. Avoid contact with skin and eyes.
Major Spills	 Clear area of personnel and move upwind. Alert Fire Brigade and tell them location and nature of hazard. DO NOT touch or walk through spilled material. Control personal contact with the substance, by using protective equipment.
	Personal Protective Equipment advice is contained in Section 8 of the SDS

SECTION 7 HANDLING AND STORAGE

Precautions for safe handling

Safe handling	 Avoid all personal contact, including inhalation. Wear protective clothing when risk of overexposure occurs. Use in a well-ventilated area. Prevent concentration in hollows and sumps.
Other information	 Store under an inert gas, e.g. argon or nitrogen. FOR MINOR QUANTITIES: Store in an indoor fireproof cabinet or in a room of noncombustible construction. Provide adequate portable fire-extinguishers in or near the storage area. FOR PACKAGE STORAGE: Store in original containers in approved flame-proof area.

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Suitable container	 CARE: Packing of high density product in light weight metal or plastic packages metal heavy gauge metal packages / Heavy gauge metal drums For low viscosity materials and solids: Drums and jerricans must be of the non-removable head type. Where a can is to be used as an inner package, the can must have a screwed enclosure For materials with a viscosity of at least 2680 cSt. (23 deg. C): Removable head packaging and cans with friction closures may be used. 	nay result in container collap e.	se with product release
Storage incompatibility	 Several platinum compounds, including trimethylplatinum derivatives are explosively Some compounds of the other platinum group metals are also of limited stability WARNING: Avoid or control reaction with peroxides. All <i>transition metal</i> peroxides complexes of alkyl hydroperoxides may decompose explosively. 	/ unstable. should be considered as pot	tentially explosive. For example transition metal

PACKAGE MATERIAL INCOMPATIBILITIES

Not Available

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

OCCUPATIONAL EXPOSURE LIMITS (OEL)

INGREDIENT DATA

US NIOSH Recommended Exposure Limits (RELs) Platinum black, Platinum metal, Platinum sponge 1 mg/m3 Not Available Not Available Not Available	Source	Ingredient	Material name	TWA	STEL	Peak	Notes
	US NIOSH Recommended Exposure Limits (RELs)	platinum	Platinum black, Platinum metal, Platinum sponge	1 mg/m3	Not Available	Not Available	Not Available

EMERGENCY LIMITS

Ingredient	Material name	TEEL-1	TEEL-2		TEEL-3
platinum	Platinum 3 mg/m3 33 mg/m3		13	200 mg/m3	
Ingredient	Original IDLH			Revised IDLH	
platinum	N.E. mg/m3 / N.E. ppm			4 mg/m3	

Exposure controls

Appropriate engineering controls	 For large scale or continuous use: Spark-free, earthed ventilation system, venting directly to the outside and separate from usual ventilation systems Provide dust collectors with explosion vents Metal dusts must be collected at the source of generation as they are potentially explosive. Avoid ignition sources. Good housekeeping practices must be maintained. Dust accumulation on the floor, ledges and beams can present a risk of ignition, flame propagation and secondary explosions.
Personal protection	
Eye and face protection	Safety glasses with side shields. Chemical goggles. Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task.
Skin protection	See Hand protection below
Hands/feet protection	NOTE: The material may produce skin sensitization in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact. Contaminated leather items, such as shoes, belts and watch-bands should be removed and destroyed. The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer.
Body protection	See Other protection below
Other protection	Overalls. Eyewash unit. Barrier cream. Barrier cream. Skin cleansing cream.
Thermal hazards	Not Available

Recommended material(s)

GLOVE SELECTION INDEX		Poguirod Minimum	Holf Esso	Eull Econ	Boworod Air
Glove selection is based on a modified presentation of the: Forsberg Clothing Performance Index". The effect(s) of the following substance(s) are taken into account in the computer generated selection: PLATINUM POWDER Not Available		Protection Factor	Respirator	Respirator	Respirator
			P1	-	PAPR-P1
			Air-line*	-	-
		up to 50 x ES	Air-line**	P2	PAPR-P2
Material CPI		up to 100 x ES	-	P3	-
				Air-line*	-
		100+ x ES	-	Air-line**	PAPR-P3

Respiratory protection

* CPI - Chemwatch Performance Index

A: Best Selection

B: Satisfactory; may degrade after 4 hours continuous immersion

C: Poor to Dangerous Choice for other than short term immersion

 $\ensuremath{\text{NOTE}}$ As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -

* Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

	Silver-gray, lustrous metal or black powder.		
Physical state	Divided Solid	Relative density (Water = 1)	Not available
Odor	Not Available	Partition coefficient n-octanol / water	Not Available
Odor threshold	Not Available	Auto-ignition temperature (°C)	Not Available
pH (as supplied)	Not Applicable	Decomposition temperature	Not Applicable
Melting point / freezing point (°C)	1773	Viscosity (cSt)	Not Applicable
Initial boiling point and boiling range (°C)	3827	Molecular weight (g/mol)	195.09
Flash point (°C)	Not Available	Taste	Not Available
Evaporation rate	Not Applicable	Explosive properties	Not Available
Flammability	Not Available	Oxidizing properties	Not Available
Upper Explosive Limit (%)	Not Available	Surface Tension (dyn/cm or mN/m)	Not Applicable
Lower Explosive Limit (%)	Not Available	Volatile Component (%vol)	Negligible
Vapor pressure (kPa)	Negligible	Gas group	Not Available
Solubility in water (g/L)	Immiscible	pH as a solution(1%)	Not Applicable
Vapor density (Air = 1)	Not Applicable	VOC g/L	Not Available

SECTION 10 STABILITY AND REACTIVITY

Reactivity	See section 7
Chemical stability	 Unstable in the presence of incompatible materials. Product is considered stable. Hazardous polymerization will not occur.
Possibility of hazardous reactions	See section 7
Conditions to avoid	See section 7
Incompatible materials	See section 7
Hazardous decomposition products	See section 5

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

Inhaled	The material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage. Inhalation of dusts, generated by the material during the course of normal handling, may be damaging to the health of the individual. Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled.
Ingestion	Accidental ingestion of the material may be damaging to the health of the individual. Not normally a hazard due to the physical form of product. The material is a physical irritant to the gastro-intestinal tract Platinoids are poorly absorbed from the gut, skin and other routes not directly in the blood stream.
Skin Contact	This material can cause inflammation of the skin on contact in some persons. The material may accentuate any pre-existing dermatitis condition Skin contact is not thought to have harmful health effects (as classified under EC Directives); the material may still produce health damage following entry through wounds, lesions or abrasions. Open cuts, abraded or irritated skin should not be exposed to this material Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.
Eye	This material can cause eye irritation and damage in some persons. Contact with the eye by metal dusts may cause mechanical abrasion or foreign body penetration of the eyeball.

* - Negative pressure demand *** - Continuous flow

 $\begin{array}{l} \mathsf{A}(\mathsf{All classes}) = \mathsf{Organic vapors}, \ \mathsf{B} \ \mathsf{AUS} \ \mathsf{or} \ \mathsf{B1} = \mathsf{Acid gasses}, \ \mathsf{B2} = \mathsf{Acid gas or hydrogen} \\ \mathsf{cyanide}(\mathsf{HCN}), \ \mathsf{B3} = \mathsf{Acid gas or hydrogen} \ \mathsf{cyanide}(\mathsf{HCN}), \ \mathsf{E} = \mathsf{Sulfur dioxide}(\mathsf{SO2}), \ \mathsf{G} = \\ \mathsf{Agricultural chemicals}, \ \mathsf{K} = \mathsf{Ammonia}(\mathsf{NH3}), \ \mathsf{Hg} = \mathsf{Mercury}, \ \mathsf{NO} = \mathsf{Oxides of nitrogen}, \ \mathsf{MB} = \\ \mathsf{Methyl bromide}, \ \mathsf{AX} = \mathsf{Low boiling point organic compounds}(\mathsf{below 65 degC}) \end{array}$

	PLATINUM POWDER	Print Date: 12/03/20
Long-term exposure to respi	iratory irritants may result in disease of the airways involving difficult breat	hing and related systemic problems.
There has been concern tha	tt this material can cause cancer or mutations, but there is not enough data	a to make an assessment.
Skin contact with the materia	al is more likely to cause a sensitization reaction in some persons compared	d to the general population.
Substance accumulation, in t	the human body, may occur and may cause some concern following repea	ted or long-term occupational exposure.

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CMR STATUS

CARCINOGEN	palladium US Environmental Defense Scorecard Suspected Carcinogens P65-MC
RESPIRATORY	palladium US - California OEHHA/ARB - Chronic Reference Exposure Levels and Target Organs (CRELs) - Respiratory X

SECTION 12 ECOLOGICAL INFORMATION

Toxicity

Harmful to aquatic organisms.

For Metal:

Atmospheric Fate - Metal-containing inorganic substances generally have negligible vapor pressure and are not expected to partition to air.

Environmental Fate: Environmental processes, such as oxidation, the presence of acids or bases and microbiological processes, may transform insoluble metals to more soluble ionic forms. Environmental processes may enhance bioavailability and may also be important in changing solubilities.

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
	No Data available for all ingredients	No Data available for all ingredients
Bioaccumulative potential		
Ingredient	Bioaccumulation	
	No Data available for all ingredients	
Mobility in soil		
Ingredient	Mobility	
	No Data available for all ingredients	

SECTION 13 DISPOSAL CONSIDERATIONS

Waste treatment methods

- Containers may still present a chemical hazard/ danger when empty.
- Return to supplier for reuse/ recycling if possible.

Product / Packaging disposal

- Otherwise:
 - If container cannot be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorized landfill.
 - Where possible retain label warnings and SDS and observe all notices pertaining to the product.

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SECTION 14 TRANSPORT INFORMATION

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Labels Required			
	TRANSFILE SOLD 2		
Marine Pollutant	NO		
Land transport (DOT)			
UN number	3089		
Packing group	И		
UN proper shipping name	Metal powders, flammable, n.o.s.		
Environmental hazard	No relevant data		
Transport hazard class(es)	Class 4.1		
Special precautions for user	Special provisions IB8, IP2, IP4, T3, TP33		
Air transport (ICAO-IATA / D	GR)		
UN number	3089		
Packing group	П		
UN proper shipping name	Metal powder, flammable, n.o.s.		
Environmental hazard	No relevant data		
	ICAO/IATA Class 4.1		
Transport hazard class(es)	ICAO / IATA Subrisk Not Applicable ERG Code 3L		
	Special provisions	A3	
	Cargo Only Packing Instructions	448	

	Special provisions	A3
	Cargo Only Packing Instructions	448
	Cargo Only Maximum Qty / Pack	50 kg
Special precautions for user	Passenger and Cargo Packing Instructions	445
	Passenger and Cargo Maximum Qty / Pack	15 kg
	Passenger and Cargo Limited Quantity Packing Instructions	Y441
	Passenger and Cargo Limited Maximum Qty / Pack	5 kg

Sea transport (IMDG-Code / GGVSee)

UN number	3089	
Packing group	II	
UN proper shipping name	METAL POWDER, FLAMMABLE, N.O.S.	
Environmental hazard	No relevant data	
Transport hazard class(es)	IMDG Class 4.1 IMDG Subrisk Not Applicable	
Special precautions for user	EMS NumberF-G , S-GSpecial provisionsNot ApplicableLimited Quantities1 kg	

SECTION 15 REGULATORY INFORMATION

Safety, health and environmental regulations / legislation specific for the substance or mixture

"US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants", "US - Hawaii Air Contaminant Limits", "US - California Permissible Exposure Limits for Chemical Contaminants", "US - Michigan Exposure Limits for Air Contaminants", "US - Oregon Permissible Exposure Limits (Z-1)", "International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs", "US OSHA Permissible Exposure Levels (PELs) - Table Z3", "US -Washington Permissible exposure limits of air contaminants", "US - California OEHHA/ARB - Chronic Reference Exposure Levels and Target Organs (CRELs)", "US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory", "US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants"

SECTION 16 OTHER INFORMATION

Other information

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

PLATINUM POWDER

A list of reference resources used to assist the committee may be found at: <u>www.chemwatch.net/referenc</u>es

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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